

## Curriculum Vitae

Zvi N. Roth

Research Fellow

Laboratory of Brain and Cognition

NIMH/NIH

### Research

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|--------------|--|
| 2021-current | Research Fellow<br>Laboratory of Brain and Cognition<br>National Institute of Mental Health, NIH                               |
| 2016-2021    | Postdoctoral Fellow<br>PI: Dr. Elisha Merriam<br>Laboratory of Brain and Cognition<br>National Institute of Mental Health, NIH |
| 2009-2016    | Graduate student<br>PI: Prof. Ehud Zohary<br>Neurobiology Dept. & ELSC<br>Hebrew University of Jerusalem                       |
| 2008-2009    | Undergraduate student<br>PI: Prof. Haim Sompolinsky<br>Racah Institute of Physics & ELSC<br>Hebrew University of Jerusalem     |

### Education

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|-----------|--|
| 2018      | Summer Course, Computational Neuroscience: Vision<br>Cold Spring Harbor Laboratory, NY   |
| 2009-2017 | Ph.D. Program in Brain Sciences: Computation and Information Processing<br>ELSC, Hebrew University of Jerusalem<br>PhD Thesis: <i>Brain Representations of Visual Percepts</i> |
| 2008      | Ulpanat De Shalit Summer School – Physics<br>Weizmann Institute, Rehovot   |

2006-2009      BSc. in Physics and Computer Science  
Hebrew University of Jerusalem

## Peer-reviewed Journal Papers

\* Denotes equal contribution

- **Roth, Z. N.**, Kay, K. \*, & Merriam, E. P. \* (In Press)  
*Natural scene sampling reveals reliable coarse-scale orientation tuning in human V1*  
Nature Communications
- Burlingham, C. S., Ryoo, M., **Roth, Z. N.**, Mirbagheri, S., Heeger, D. J., & Merriam, E. P. (2022)  
*Task-related hemodynamic responses in human early visual cortex are modulated by task difficulty and behavioral performance*  
eLife
- Steinberg, N. J. \*, **Roth, Z. N. \***, & Merriam, E. P. (2022)  
*Spatiotopic and retinotopic memory in the context of natural images*  
Journal of Vision
- **Roth, Z. N.**, Ryoo, M., & Merriam, E. P. (2020)  
*Task-related activity in human visual cortex*  
PLOS Biology
- **Roth, Z. N.**, Heeger, D. J., & Merriam, E. P. (2018)  
*Stimulus vignetting and orientation selectivity in human visual cortex*  
eLife
- **Roth, Z.N.** (2016)  
*Functional MRI Representational Similarity Analysis Reveals a Dissociation between Discriminative and Relative Location Information in the Human Visual System*  
Frontiers in Integrative Neuroscience
- **Roth, Z.N.**, & Zohary, E. (2015)  
*Position and Identity Information Available in fMRI Patterns of Activity in Human Visual Cortex*  
The Journal of Neuroscience
- **Roth, Z. N.**, & Zohary, E. (2014)  
*Fingerprints of Learned Object Recognition Seen in the fMRI Activation Patterns of Lateral Occipital Complex*  
Cerebral Cortex

## Teaching Experience

June 2021	Guest Lecturer 'Laminar fMRI', in: <i>Advanced fMRI analyses for cognitive and vision research</i> (course no. 76962) ELSC, Hebrew University of Jerusalem
2015-2016	Teacher Assistant <i>Uncovering principles of human vision using fMRI</i> (course no. 76962) Initiated and built course, and delivered lectures ELSC, Hebrew University of Jerusalem
2012-2014	Teacher Assistant <i>Cognitive Processes A</i> (course no. 76912) Modified course, translated to English, and delivered lectures ELSC, Hebrew University of Jerusalem
November 2012	Guest Lecturer 'Visual Perception', in: <i>Cognitive Processes for Cognitive Sciences</i> (course no. 06115) Hebrew University of Jerusalem
2012-2013	Teacher Assistant <i>Data Structures</i> (course no. 10031) Prepared and delivered review lectures Azrieli College of Engineering, Jerusalem

## Invited Lectures

- **Perception Lunch, University of Minnesota**, 25 January 2022 (by Zoom). *Orientation selectivity and fMRI redux: what are we actually measuring?*
- **Informal Center for Perceptual Systems (CPS) Seminar, The University of Texas at Austin**, 14 September 2022. *Orientation selectivity and fMRI redux: what are we actually measuring?*

## Conference Lectures

- **Roth, Z.N.**, Kay, K., Merriam, E.P. (2022), *Orientation selectivity in human V1 revisited*. Vision Sciences Society annual meeting.

- **Roth, Z.N.**, Ryoo, M., Merriam, E.P. (2020), *Widespread task-related fMRI responses in visual cortex*. Israel Society for Neuroscience (ISFN) 28<sup>th</sup> Meeting.
- Huber, L., Merriam, E.P., Kim, I., Chai, Y., Kashyap, S., Polimeni, J.R., **Roth, Z.**, Shim, W.M., Kim, S.G., Ivanov, D. and Poser, B., (2019), *Measuring layer-dependent CBV fMRI in the visual system*. ISMRM 27<sup>th</sup> Annual Meeting & Exhibition. In *Proc Intl Soc Mag Reson Med* (p. 0399).
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2018), *Orientation selectivity and stimulus vignetting in human visual cortex*. Vision Sciences Society annual meeting. *Journal of Vision*, 18(10), 1052-1052.
- **Roth, Z.N.**, & Zohary, E. (2016). *Location and Identity Information Carried by fMRI Activation Patterns in Human Visual Cortex*. ELSC Ein Gedi Retreat.
- **Roth, Z.N.**, & Zohary, E. (2015). *Location and identity information carried by fMRI activation patterns in human visual cortex*. ISFN 24<sup>th</sup> Meeting.
- **Roth, Z.**, & Zohary, E. (2012). *Learning to recognize degraded objects is associated with a greater match to the objects' template patterns in lateral occipital cortex*. Israel Society for Neuroscience (ISFN) 21<sup>st</sup> Meeting.

## Conference Posters

- Kim, J.H., Yin C., Merriam, E.P., **Roth, Z.N.** (2022), *Pupil size is sensitive to low-level features, independent of arousal-related modulation*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2020), *Stimulus vignetting and orientation selectivity in human visual cortex*. Israel Society for Neuroscience (ISFN) 28<sup>th</sup> Meeting.
- **Roth, Z.N.**, Steinberg, N.J., Merriam, E.P. (2019), *Spatiotopic memory is more precise than retinotopic memory in the context of natural images*. Vision Sciences Society annual meeting.
- Steinberg, N.J., **Roth, Z.N.**, Movshon, J.A., Merriam, E.P. (2019), *Neural correlates of the double-drift illusion*. Vision Sciences Society annual meeting.
- **Roth, Z.N.**, Heeger, D.J., & Merriam, E.P. (2018), *Orientation selectivity and stimulus vignetting in human visual cortex*. Cognitive Computational Neuroscience annual meeting.
- Ryoo, M., Burlingham, C., **Roth, Z.**, Mirbagheri, S., Heeger, D.J., & Merriam, E. (2018), *A widespread task-related hemodynamic response in human V1 is modulated by task difficulty*. Vision Sciences Society annual meeting.

- **Roth, Z.N., & Merriam, E.P. (2017).** *Stimulus vignetting and coarse-scale biases for orientation in human visual cortex.* Society for Neuroscience (SFN) annual meeting.
- **Roth, Z.N., & Merriam, E.P. (2017).** *Stimulus vignetting and orientation selectivity in human visual cortex.* National Institute of Mental Health (NIMH) Training Day.
- **Roth, Z.N., & Zohary, E. (2016).** *Position Information in Human Visual Cortex.* Organization of Human Brain Mapping (OHBM) Annual Meeting.
- **Roth, Z.N., & Zohary, E. (2016).** *Position Information in Human Visual Cortex.* Jerusalem Brain Community (JBC) Annual Retreat.
- **Roth, Z. N., & Zohary, E. (2014).** *Position invariance and object affordance in human parietal cortex.* European Conference of Visual Perception (ECPV) 2014 Meeting.
- **Roth, Z. N., & Zohary, E. (2014).** *Position Invariance and Object Affordances in Human Parietal Cortex.* ELSC Ein Gedi Retreat.
- **Roth, Z., & Zohary, E. (2013).** *Learning to recognize degraded objects is associated with a greater match to the objects' template fMRI activation patterns in Lateral Occipital Cortex.* Vision Sciences Society 2013 Meeting.

## Awards

2023	NIH Fellows Award for Research Excellence 2023
2019	NIMH Intramural Research Program OFT Trainee Travel Award
2019	VSS 2019 National Eye Institute Postdoctoral Travel Award
2016-2017	ELSC Postdoctoral Fellowship Abroad scholarship
2016	ELSC Prize for the first scientific paper based on data collected from the SKYRA magnet
2014	ELSC Prize for Outstanding Academic Performance 2013-2014 for published paper
2007	Dean's list, Faculty of Science, Hebrew University of Jerusalem

## **Personal Info**

- Citizenship: Israeli, American, Australian
- Place of birth: Melbourne, Australia
- Residence: Maryland, USA
- Married + 2 children
- Website: <https://zviroth.github.io/>